

SEQUENCE LISTING

<110> Bayer Aktiengesellschaft

<120> Ultraspiracle (USP) protein from Heliothis virescens

<130> Le A 34 771

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<150> DE 100 36 469.1

<151> 2000-07-25

<160> 2

<170> PatentIn Ver. 2.1

<210> 1

<211> 1398

<212> DNA

<213> Heliothis virescens

<220>

<221> CDS

<222> (1)..(1398)

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atc aac tgg gct cga ccc ttg ccg ccg ggc caa cag cag cag ccg atg 96

Ile Asn Trp Ala Arg Pro Leu Pro Pro Gly Gln Gln Gln Pro Met

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acg cct acg tcg ccc gga aac atg ctt caa ccg atg gct acg ccg tct 144

Thr Pro Thr Ser Pro Gly Asn Met Leu Gln Pro Met Ala Thr Pro Ser

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aac tta ccg act gtc gac tgc tca ctc gat att caa tgg cta aac ttg 192

Asn Leu Pro Thr Val Asp Cys Ser Leu Asp Ile Gln Trp Leu Asn Leu

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60

gag gga ggt ttt atg tcg ccg atg tca ccg ccg gag atg aag cca gac 240

Glu Gly Gly Phe Met Ser Pro Met Ser Pro Pro Glu Met Lys Pro Asp

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70

75

80

acg	gcg	atg	cta	gac	ggc	ctg	cga	gac	gac	tcc	acc	cca	ccc	cca	gct	288		
Thr	Ala	Met	Leu	Asp	Gly	Leu	Arg	Asp	Asp	Ser	Thr	Pro	Pro	Pro	Ala			
															95			
			85							90								
ttc	aag	aac	tac	ccc	ccg	aac	cat	ccc	cta	agt	ggt	tct	aag	cac	ctc	336		
Phe	Lys	Asn	Tyr	Pro	Pro	Asn	His	Pro	Leu	Ser	Gly	Ser	Lys	His	Leu			
			100							105					110			
tgt	tct	ata	tgt	gga	gat	aga	gcg	tcg	ggg	aaa	cat	tat	gga	gta	tac	384		
Cys	Ser	Ile	Cys	Gly	Asp	Arg	Ala	Ser	Gly	Lys	His	Tyr	Gly	Val	Tyr			
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agt	tgt	gaa	ggt	tgc	aaa	ggt	ttc	ttc	aaa	agg	acg	gta	aga	aaa	gac	432		
Ser	Cys	Glu	Gly	Cys	Lys	Gly	Phe	Phe	Lys	Arg	Thr	Val	Arg	Lys	Asp			
			130							135					140			
tta	acg	tac	gca	tgc	cgc	gaa	gaa	cgt	aac	tgc	atc	ata	gac	aaa	cgc	480		
Leu	Thr	Tyr	Ala	Cys	Arg	Glu	Glu	Arg	Asn	Cys	Ile	Ile	Asp	Lys	Arg			
			145			150				155					160			
cag	agg	aac	aga	tgc	cag	tac	tgt	agg	tac	cag	aaa	tgt	ctc	gcg	tgc	528		
Gln	Arg	Asn	Arg	Cys	Gln	Tyr	Cys	Arg	Tyr	Gln	Lys	Cys	Leu	Ala	Cys			
			165							170					175			
ggc	atg	aag	agg	gaa	gcg	gtg	cag	gag	agg	cag	agg	gcc	gcc	aga		576		
Gly	Met	Lys	Arg	Glu	Ala	Val	Gln	Glu	Arg	Gln	Arg	Ala	Ala	Arg				
			180						185						190			
ggt	acg	gag	gat	gca	cat	ccg	agc	agc	tcg	gtg	cag	gta	cag	gag	tta	624		
Gly	Thr	Glu	Asp	Ala	His	Pro	Ser	Ser	Val	Gln	Val	Gln	Glu	Leu				
			195						200						205			
tca	atc	gag	cg	ttg	ctg	gag	atg	gag	tca	ctg	gta	gct	gac	ccc	agc	672		
Ser	Ile	Glu	Arg	Leu	Leu	Glu	Met	Glu	Ser	Ser	Val	Gln	V	Ala	Asp	Pro	Ser	
			210						215						220			
gaa	gag	ttc	cag	ttc	ctt	cgt	gtg	gga	ccc	gac	agt	aat	gtg	ccg	cct	720		
Glu	Glu	Phe	Gln	Phe	Leu	Arg	Val	Gly	Pro	Asp	Ser	Asn	Val	Pro	Pro			
			225						230						235			
aag	ttc	cgc	gcc	cct	gtc	tcc	agc	ctt	tgt	caa	ata	ggc	aac	aaa	caa	768		
Lys	Phe	Arg	Ala	Pro	Val	Ser	Leu	Cys	Gln	Ile	Gly	Asn	Lys	Gln				
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ata	g	cg	ct	gt	gt	tg	g	cg	cg	g	ac	tc	ac	cg		816		
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DRAFT

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gag cga gac ggc gtg gac ggc act ggg aac aga acc aca tcg ccg cca	960	
Glu Arg Asp Gly Val Asp Gly Thr Gly Asn Arg Thr Thr Ser Pro Pro		
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caa ctt atg tgt ctc atg cct gcc atg acg ctg cac cgc aac tca gcg	1008	
Gln Leu Met Cys Leu Met Pro Gly Met Thr Leu His Arg Asn Ser Ala		
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Ser Leu Lys Met Arg Thr Leu Arg Val Asp Gln Ala Glu Tyr Val Ala		
355	360	365
ctc aag gcc atc ata ctg ctc aac cca gat gtg aag gga ctg aaa aac	1152	
Leu Lys Ala Ile Ile Leu Leu Asn Pro Asp Val Lys Gly Leu Lys Asn		
370	375	380
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Arg Gln Glu Val Glu Val Leu Arg Glu Lys Met Phe Leu Cys Leu Asp		
385	390	395
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Glu Tyr Cys Arg Arg Ser Ser Glu Glu Gly Arg Phe Ala Ala		
405	410	415
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420	425	430
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435	440	445
tac atc cgc gac gcg ctg cgc aac cac gcg ccg ccc atc gac acc aac	1392	
Tyr Ile Arg Asp Ala Leu Arg Asn His Ala Pro Pro Ile Asp Thr Asn		
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atg atg
Met Met
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1398

<210> 2
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<213> Heliothis virescens

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Asn Leu Pro Thr Val Asp Cys Ser Leu Asp Ile Gln Trp Leu Asn Leu
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Glu Gly Gly Phe Met Ser Pro Met Ser Pro Pro Glu Met Lys Pro Asp
65 70 75 80

Thr Ala Met Leu Asp Gly Leu Arg Asp Asp Ser Thr Pro Pro Pro Ala
85 90 95

Phe Lys Asn Tyr Pro Pro Asn His Pro Leu Ser Gly Ser Lys His Leu
100 105 110

Cys Ser Ile Cys Gly Asp Arg Ala Ser Gly Lys His Tyr Gly Val Tyr
115 120 125

Ser Cys Glu Gly Cys Lys Gly Phe Phe Lys Arg Thr Val Arg Lys Asp
130 135 140

Leu Thr Tyr Ala Cys Arg Glu Glu Arg Asn Cys Ile Ile Asp Lys Arg
145 150 155 160

Gln Arg Asn Arg Cys Gln Tyr Cys Arg Tyr Gln Lys Cys Leu Ala Cys
165 170 175

Gly Met Lys Arg Glu Ala Val Gln Glu Glu Arg Gln Arg Ala Ala Arg
180 185 190

Gly Thr Glu Asp Ala His Pro Ser Ser Ser Val Gln Val Gln Glu Leu

195

200

205

Ser Ile Glu Arg Leu Leu Glu Met Glu Ser Leu Val Ala Asp Pro Ser
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Glu Glu Phe Gln Phe Leu Arg Val Gly Pro Asp Ser Asn Val Pro Pro
 225 230 235 240

Lys Phe Arg Ala Pro Val Ser Ser Leu Cys Gln Ile Gly Asn Lys Gln
 245 250 255

Ile Ala Ala Leu Val Val Trp Ala Arg Asp Ile Pro His Phe Ser Gln
 260 265 270

Leu Glu Met Glu Asp Gln Ile Leu Leu Ile Lys Gly Ser Trp Asn Glu
 275 280 285

Leu Leu Leu Phe Ala Ile Ala Trp Arg Ser Met Glu Phe Leu Thr Glu
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Glu Arg Asp Gly Val Asp Gly Thr Gly Asn Arg Thr Thr Ser Pro Pro
 305 310 315 320

Gln Leu Met Cys Leu Met Pro Gly Met Thr Leu His Arg Asn Ser Ala
 325 330 335

Leu Gln Ala Gly Val Gly Gln Ile Phe Asp Arg Val Leu Ser Glu Leu
 340 345 350

Ser Leu Lys Met Arg Thr Leu Arg Val Asp Gln Ala Glu Tyr Val Ala
 355 360 365

Leu Lys Ala Ile Ile Leu Leu Asn Pro Asp Val Lys Gly Leu Lys Asn
 370 375 380

Arg Gln Glu Val Glu Val Leu Arg Glu Lys Met Phe Leu Cys Leu Asp
 385 390 395 400

Glu Tyr Cys Arg Arg Ser Arg Ser Ser Glu Glu Gly Arg Phe Ala Ala
 405 410 415

Leu Leu Leu Arg Leu Pro Ala Leu Arg Ser Ile Ser Leu Lys Ser Phe
 420 425 430

Glu His Leu Phe Phe His Leu Val Ala Asp Thr Ser Ile Ala Gly
 435 440 445

Tyr Ile Arg Asp Ala Leu Arg Asn His Ala Pro Pro Ile Asp Thr Asn

450

455

460

Met Met

465